

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference NUP-010PC	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2007/011020	International filing date (day/month/year) 07/05/2007	(Earliest) Priority Date (day/month/year)
Applicant CONTOUR SEMICONDUCTOR, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

- b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

- c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No. III)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 10
☐ as suggested by the applicant
☒ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention
- b. ☐ none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/011020

A. CLASSIFICATION OF SUBJECT MATTER

INV. G11C16/02 G11C17/06 G11C17/10 G11C7/00 G11C13/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G11C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2006/072427 A1 (KANDA YOSHIHIRO [JP] ET AL) 6 April 2006 (2006-04-06) paragraphs [0079] - [0088]; figures 1,17,18 -----	1-5,8, 12, 16-20,24 6

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

Z document member of the same patent family

Date of the actual completion of the international search

28 February 2008

Date of mailing of the international search report

18/07/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2

NL - 2280 HV Rijswijk

Tel. (+31-70) 340-2040 Fax: 31 651 epo.nl

Fax: (+31-70) 340-2040

Authorized officer

Ramcke Tioe

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/011020

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6, 8, 12, 16-20, 24

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6,8,12,16-20,24

Claim 6: the cavity comprises at least one noble gas

2. claim: 7

the cavity comprises at least one phosphorescent material

3. claim: 9

the address circuitry comprises a first array of non-linear electron-emitting devices

4. claims: 10,11

an output detection circuitry detecting the presence or absence of a non-linear electron-emitting diode

5. claim: 13

a memory cell comprises at least one fuseable or antifuseable material

6. claims: 14,15

a memory cell comprises at least one phase-change material or magnetic material

7. claim: 21

the first and second pluralities of conductors are disposed within a display device

8. claim: 22

the first and second pluralities of conductors are disposed within a programmable logic array

9. claim: 23

the first and second pluralities of conductors are disposed on a substrate, and the plurality of non-linear electron-emitting diodes emit electrons in a direction toward the substrate

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

10. claim: 25

the emitter tip of at least one of the plurality of
non-linear electron-emitting devices is melted, rendering
the non-linear electron-emitting device non-functional

11. claims: 26-33

method steps of forming a plurality of non-linear
electron-emitting devices on a substrate

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/011020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 2006072427	A1	06-04-2006	CN 1745431 A WO 2004114314 A1	08-03-2006 29-12-2004
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

JUL 24 2008

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2007/011020

International filing date (day/month/year)
07.05.2007

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
INV. G11C16/02 G11C17/06 G11C17/10 G11C7/00 G11C13/02

Applicant
CONTOUR SEMICONDUCTOR, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA



European Patent Office
D-80298 Munich
Tel. +49 89 2399-0 Telex 523656 epmu d

Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Ramcke, Ties



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2007/011020

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in electronic form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2007/011020

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA206) to pay additional fees, the applicant has, within the applicable time limit:
- ☐ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☒ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-6, 8, 12, 16-20,24

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>6</u>
	No: Claims	<u>1-5, 8, 12, 16-20,24</u>
Inventive step (IS)	Yes: Claims	<u>6</u>
	No: Claims	<u>1-5, 8, 12, 16-20,24</u>
Industrial applicability (IA)	Yes: Claims	<u>1-6, 8, 12, 16-20,24</u>
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2007/011020

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item IV

Lack of unity of invention

1. Document D1 (US 2006/0072427 A1) is regarded as the closest prior art and discloses an electrode structure and an electron emitting device.
2. Regarding independent apparatus claim 1, document D1 discloses in figures 1, 17 and 18 and paragraphs [0079] to [0088] a structure comprising: a first plurality of conductors (see figure 17 and 18); a second plurality of conductors overlapping the first plurality of conductors (see fig. 17 and 18), wherein each point of intersection between the first and second pluralities of conductors defines a memory bit; and a plurality of non-linear electron-emitting devices (figs. 1, 17 and 18), wherein each device is disposed at a point of intersection between the first and second pluralities of conductors.

Therefore all the features of claim 1 are known from D1. Thus the present application does not meet the requirements of Article 33(2) PCT (novelty).

The features of claims 2-5, 8, 12, 16 to 20 and 24 are also anticipated by D1.

3. Regarding claim 1 and the features of the remaining claims, the present application comprises 11 groups of inventions which are not linked by a single general inventive concept.
 - 3.1 The first group of inventions comprises claim 6 and is characterised by the "special technical feature" that the cavity comprises at least one noble gas.
 - 3.2 The second group of inventions comprises claim 7 and is characterised by the "special technical feature" that the cavity comprises at least one phosphorescent material.
 - 3.3 The third group of inventions comprises claim 9 and is characterised by the "special technical feature" that the address circuitry comprises a first array of non-linear electron-emitting devices.

- 3.4 The fourth group of inventions comprises claims 10 and 11 and is characterised by the "special technical feature" of an output detection circuitry detecting the presence or absence of a non-linear electron-emitting diode.
- 3.5 The fifth group of inventions comprises claim 13 and is characterised by the "special technical feature" that a memory cell comprises at least one fuseable or antifuseable material.
- 3.6 The sixth group of inventions comprises claims 14 and 15 and is characterised by the "special technical feature" that a memory cell comprises at least one phase-change material or magnetic material.
- 3.7 The seventh group of inventions comprises claim 21 and is characterised by the "special technical feature" that the first and second pluralities of conductors are disposed within a display device.
- 3.8 The eighth group of inventions comprises claim 22 and is characterised by the "special technical feature" that the first and second pluralities of conductors are disposed within a programmable logic array.
- 3.9 The ninth group of inventions comprises claim 23 and is characterised by the "special technical feature" that the first and second pluralities of conductors are disposed on a substrate, and the plurality of non-linear electron-emitting diodes emit electrons in a direction toward the substrate.
- 3.10 The tenth group of inventions comprises claim 25 and is characterised by the "special technical feature" that the emitter tip of at least one of the plurality of non-linear electron-emitting devices is melted, rendering the non-linear electron-emitting device non-functional.
- 3.11 The eleventh group of inventions comprises claims 26 to 33 and is characterised by the "special technical feature" of method steps of forming a plurality of non-linear electron-emitting devices on a substrate.

4. Although the common link between these 11 groups can be seen in that they relate to an electrode structure and an electron emitting device, these features and the features of claims 1-5, 8, 12, 16 to 20 and 24 are known from the prior art.

Hence none of the 11 groups of inventions has any novel features in common. Consequently, there are no "special technical features" which justify a technical relationship between said 11 groups.

Therefore the present application does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

5. The following document is referred to; the numbering will be adhered to in the rest of the procedure:

D1: US 2006/072427 A1 (KANDA YOSHIHIRO [JP] ET AL) 6 April 2006 (2006-04-06)

6. Claim 1 lacks novelty over D1.
7. The particular features of claim 6, the cavity comprises at least one noble gas, are not anticipated by D1, nor rendered obvious in view of other prior art.

Re Item VII

Certain defects in the international application

8. Further defects:
- The independent claims are not cast in two part form, contrary to Rule 6.3(b) PCT.
 - The claims do not contain reference signs, contrary to Rule 6.2(b) PCT.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2007/011020

- The relevant prior art (D1) is not acknowledged in the description, contrary to Rule 5.1(a)(ii).